1: Gifford E-4,5 (1920-1921) 1929 0U9 Tonga 0U9

rough and heavy work. He feeds them with the best of foods. When the work is over, he makes a handsome present of fine mats and other objects to the chief carpenter. A carpenter, even if dissatisfied with the conditions, may not throw down his tools—as is done in Samoa. A carpenter may build houses for matapules and commoners as well as chiefs. Only rarely he builds a house for a commoner, and only when the commoner is so fortunate as to possess something suitable as a present. Most commoners erect their own humble dwellings. The matapules, however, invariably having plenty of worldly goods, can well afford to pay the carpenter.

Burial vaults made of six slabs of coral limestone forming a rectangular box are the work of stone masons called *tufunga taomaka*. Mariner limits the stone mason to the *mua* and *tua* classes but Fakauho, who is at the same time mason and carpenter, is a matapule—perhaps a modern exception.

Fishing

Communal fishing (*pola*) in Tonga is practiced on a large scale. In a seaside community a *toutai*, to whom the special name of *pulepola* (ruler of the *pola*) is applied, organizes the fishing. He gets a number of men (*kauleo*) to assist him in supplying of materials and constructing the apparatus. In a *pola* held near Nukualofa on February 12, 1921, about forty of these men directed the activities of more than a thousand people:

On February 9, the *kauleo* with their wives and children, headed by the *pulepola*, assembled at the appointed place and for two days made preparation. Before noon of February 12 the apparatus, including a huge fence of coconut leaves, was completed. Meantime all the countryside, men, women, and children, had gathered on the beach to take part in the fishing. The *pulepola*, the district chief, and the *kauleo* caught two baskets of fish which were sent to the Queen by two boys on horseback. After this tribute was made, everyone kept what he caught, even those who had taken no hand in the construction of the apparatus. The *kauleo* and the *pulepola* were well oiled, girded with good mats and *sisi* and wore flower garlands about the neck. The rest of the people were dressed in ordinary working clothes.

Each *tofia* (hereditary lands of a chief) had exclusive rights to the *pola* grounds (*tanungapola*) on its waterfront and any community fronting on the shore could at will construct *pola* on its waterfront. Inland communities did not take part, obtaining fish from seashore peoples of the same chiefly districts.

If the shore lines of a chief's territory did not possess the sandy bottom essential to the *pola* construction, he could seek permission to use a neighboring *tanungapola*. Should permission be granted, the chief of the *tofia*

1: Gifford E-4,5 (1920-1921) 1929 OU9 Tonga OU9

FISHING RIGHTS

The nearest approach to true communal rights lay in fishing grounds. 423
The rights to fishing, whether close to shore or further out, belonged to 226
those living on the adjacent coast. Most chiefs had land fronting on the [622]
water where their fishing operations were conducted. Every "commoner" [565]
who lived on a tract bordered by water could fish along his waterfront.
The inland man without a waterfront on which to fish usually had "*tofia* [438]
brothers" (men under the same chief) living on the shore who supplied fish
in return for yams, fruit, taro, and other inland products.

Sometimes an inland man poached at his own risk on another's water- 423
front. If apprehended, his traps might be destroyed and his fish con- 226
fiscated. Sometimes, if fish were hard for inlanders to obtain, a large party 685
would fish in force and depend upon their allied strength to protect them.
But even then, the poaching would take place on the waterfrontage of the [622]
poachers' own chief.

If, as sometimes happened, a man fished in a canoe before the lands of 423
a chief other than his own, he would then present his first catch (a large 622
number of fish) to the chief, who might then allow the man to continue 226
fishing for the day. A story is told of an inland man who fished in a
canoe before the *tofia* of the first Tungi. When he landed his canoe, Tungi
himself confronted him, bit each fish on the back of the neck and said,
"These fish are mine."

At variance with these assertions are the statements of Okoa informants 423
that the people of their island might fish anywhere in Vavau, and that 226
claim to a fishing place is established by setting up on the reef a stick with
a leaf attached—such a statement probably pertains to modern conditions
only. Another example of communism at Okoa, which is probably modern, 423
is the use of a boat of one or two tons burden which belongs to the whole 226
village. The boat may be used by individuals for fishing. If the catch is 501
large it is shared with fellow villagers, and in any event the mayor is given 621
part of the catch. 622

The stone dam (*pae*) built across a channel outlet to a pool on the reef, 423
to trap the fish seeking the sea on the outgoing tide, was said to be the 226
property of the family group occupying the adjoining tract.

COMMUNAL FENCES, CISTERNS, AND WELLS

Another example of communal effort, at least in modern Tonga, is the 423
fence (*afonua*) which surrounds some villages to prevent the pigs straying 417
into the neighboring plantations and uprooting the plants. Each taxpayer 361
in a village has a certain length of fence to keep in repair. 231
621

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

FISHING

The villagers in Pangai do not have either easy or quick access to good fishing-grounds other than the nearby reefs. This is the reason why fishing does not bulk so largely in the work-activities of the men as it does in those of other villages. A few of the men most interested fish fairly consistently, selling their surplus fish to other households of the village. The majority of the men however, think fishing too onerous a job. They buy fish or canned meat when they have the ready money. For the rest of the time they subsist on a meatless diet. These men are of course still well aware of the various fishing-techniques. Some of these fishing-methods are mentioned in this section in order to show something of the ways in which the villager is able to use working-party methods to gain a desired end, to show also the survival of a few magical beliefs in this type of activity.

Shark-fishing is still the most organized of all fishing-methods. Typically, six or more men go in a cutter to the place called Matahina, off the coast of Vava'u proper, recognized as the best shark-fishing bed. Twenty dry coconut-husks have been fastened on a long wire. At Matahina the expert fisherman in charge *(toutai)* drops these husks into the water and jangles them together as he intones an ancient incantation calling on Hina to send sharks. If sharks approach but then disappear again, he uses another incantation to allay their coyness. If no sharks appear after repeated calls, the attempt is made again in other parts of the fishing-beds. When sharks appear round the cutter, a noose is slipped into the water, salt meat is spread in front of the noose and the effort made to draw the noose tight over the shark as it darts after the bait. A successful expedition will often catch many sharks by this method. Should the expedition be unsuccessful, the expert fisherman knows that someone back in the village has disturbed or interfered with his *falesiu* or "shark-house." This is a closed container—an empty kerosene tin, a box, a marine shell, or even a house—which the expert has designated as the "shark-house" for the expedition. This designation has rendered the container *tapu*. It has either been hidden if small, or ostensibly

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

5/-. It was only by tremendous effort that the auctioneer was able to increase the opening bid to twenty times its amount. This is not to be taken as implying in any way that Tongans are dishonest in money matters. They are just carelessly easy-going where money is concerned. Store-keeping in Tonga therefore, is perhaps fraught with more hazards than is usual elsewhere.

The itemized list of sales from the more reliable of the two native store managers in Pangai shows that about forty different articles were sold during the year. Table 9 shows the items of western European material culture that are significant to the culture of the Pangai villager today.

TABLE 9.—STORE SALES

Article	Percentage of Total Sales	Group Percentage of Total Sales
Canned meats	21	
Flour	14	
Sugar	11	70
Tobacco	10	
Piece-goods	7	
Soap	7	
Kerosene	5	
Fishlines	5	
Fishhooks	2	20
Canned fish	3	
Shirts	3	
Bushknives	2	
Matches, rope, crockery Singlets (vests), lanterns	Each item small	5
Spades, candy, blue Groceries (cocoa, canned milk, coffee, jam) Cotton thread Teething-powder	Each item very small	4
Ink, pencils, slate-pencils Buckets, tubs, umbrellas Needles	Each item smaller	1

This table lists materials and foods according to percentages based on volume of sales. This does not of course necessarily correspond to the value or status-position of these articles or goods in the lives of the villagers. Piece-

13: Beaglehole & Beaglehole E-5 (1938-1939) 1941
OU9 Tonga OU9
Vavau
Pangai

goods (used for making the *vala*, dresses, etc.), shirts and vests are vitally important in order to conserve what might be called a decency-status in village life.[16] Soap and blue are similarly necessary to keep both clothing and the person reasonably clean. Tobacco for the villager is more than a luxury, specially when alcoholic liquor is practically unobtainable. Reels of cotton, though costing relatively little, play a vital part in clothes-repairing. Lastly, teething-powders, which account for almost one quarter of the expenditure on the items with which it is grouped in the table above (one per cent. also out of total store expenditures), perform the incredibly useful function of keeping teething infants from wailing wretchedly day and night and thus preserve a sufficient measure of quiet for adults to sleep. (Expert medical opinion in Tonga suggests that the frequent use of these teething-powders, which generally contain a large measure of powerful drugs, is one not unimportant contributory factor in a high infant mortality among the villagers. But it is hard to convince a Tongan of this fact; all the more so in that adults, children, and infants all share the same floor at night and the frustrations imposed upon one who would sleep by the wailing of a toothache-racked child can always be relieved by administering teething powders to the infant.)

The percentage-distribution of sales as set forth in this table refers only to one of the two stores in the village. There is no reason to think that the general percentages and proportions would be materially altered were it also possible to include sales from the second store in the village and also sales made to villagers from the several stores in nearby Neiafu.

Although some few men in the village obviously have a greater yearly income of money than the majority, there are as yet few signs of any tendency to reckon social prestige in terms of wealth-accumulation. The village overseer, the

[16] By Tongan law, rigidly enforced, men and women (both Tongan and white) must cover with clothing upper and lower parts of the body. Considerable ingenuity is exercised by those pleading before Tongan courts in order to determine what constitutes for men an upper garment that infringes neither law nor decency. Apparently a necklace does not constitute an upper garment but a shirt collar with hardly more than a tatter of shirt hanging precariously to the collar, is considered to be well within the law!

21: Simkin U-5 (no date) 1945 OU9 Tonga OU9

241 can develop into important agencies for the country's economic 185 development.

241 Tonga differs most from other Pacific island groups in that European 423 planters play an insignificant role in its agriculture. It has been the [189] studied and consistent policy of the government to prevent the development of European plantations and the consequent growth of a native [563] proletariat. No one can buy land in Tonga, and leases to Europeans are severely restricted. Less than 1,700 have been granted, and nearly all of them are for commercial or residential sites. Only 24 are for agricultural purposes, and none for an area of more than two hundred [563] acres. These small plantations rely for their labour upon the 350 Solomon Islanders and Fijians resident in the Kingdom.

Tongan Trade

438 Commerce, particularly monetary commerce, is unimportant in a 438 land of subsistence farmers. Tonga has a considerable trade in such 437 local products as livestock, fish, vegetables, fruit, baskets, mats and tapa cloth, but it is largely unorganised and mostly on a basis 437 of barter. The Tongan needs money for few purposes other than 436 to pay his rent and poll tax, to subscribe to his church, and to purchase [439] a few imported articles. The comparative unimportance of monetary [651] transactions is shown by exports per head amounting to only £2·9 in 1938, imports per head to £2·4, and native taxes per head to £0·2.*

439 Imports, indeed, play a very small direct role in the Tongan standard of living. Nearly a quarter of them consist either of producers' materials —copra sacks, banana shooks, timber, cordage, and rope—or of goods which are largely for European consumption—tobacco, beer, spirits, [511] automobiles and benzine. The significance of the imports that enter

439 *Statistical summary of Tonga's Foreign Trade (Tongan Gazette).

435

Year	Copra Exports	Average Price of Copra	Bananas	Other Exports	Total Exports	Total Imports
	£A	£A per ton	£A	£A	£A	£A
1933	105,028	9·2	—	9,419	114,447	86,007
1934	59,941	5·9	—	18,901	77,842	48,526
1935	79,003	6·6	—	11,708	90,711	68,782
1936	105,078	8·8	—	11,461	116,539	92,296
1937	158,133	13·1	4,128	2,359	164,620	137,365
1938	90,398	7·3	3,507	4,558	98,463	82,795
1939	64,545	6·1	12,026	3,249	79,820	79,696
1940	43,896	6·0	12,905	5,474	62,275	76,360
1941	25,548	6·0	24,179	6,732	56,459	71,943
1942	89,771	11·0	26,043	4,574	120,388	144,110

22: West M-3 (1846-1855) 1865 OU9 Tonga OU9

[Eua]

Of the two former, nothing need be said here, as they were small and unimportant; but a passing notice of Eua may complete our view of the Tonga group.

Several visits to this island, at different periods, enabled us to form a good opinion of its physical character and capabilities. Having been styled the "granary of Tonga," we expected to see it in a very high state of cultivation, but we found nothing peculiar in it in this respect. At present it has but a very small number of people upon it; and these, being cut off from foreign intercourse through the want of a harbour, have no inducement to cultivate the soil beyond the necessities arising for their own support. The beauties of the island are great, and its richness of soil for agricultural purposes unquestionable, but these lie undeveloped. In former days, when the population of the country was greater, large supplies of produce may have been carried to the adjoining main island of Tongatabu, especially in seasons of famine caused by drought or hurricanes. From the effects of the one the snug and lovely valleys and ravines of Eua would be sheltered; while its flowing rivulets and streams would counteract the evil consequences of the other, at times when Tongatabu itself might be lying in temporary desolation. Hence the dependence of the Tongans upon Eua, at such times, for food; and hence, probably, the reason why it was styled, magniloquently, their "granary."

One of the pleasantest Missionary trips I ever had was to this island, in company with the Rev. George Daniel, in the year 1851. We each took our own boat and boat's crew. The wind being

39: Gerstle & Raitt C,Q-4,5 (1952-1972) 1974 OU9 Tonga OU9

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With increasing urbanization, many people in Tonga's capital city are finding themselves too busy to grow their own food. Thus, an average day at *Talamahu* ("to tell of plenty") *Market* finds people bustling about buying papayas, taro, coconuts, bananas, vegetables, weaving materials and other items brought from farm lands outside the urban setting.

'Alu pe e fakaleka mo e si'isi'i e taimi 'o e kakai ke toe fai ha ngoue. Ko e ongo ta eni 'o e fakatau me'akai 'i he Maketi Talamahu.

59. Gerstle & Raitt C,Q-4,5 (1952-1972) 1974 OU9 Tonga OU9

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142
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[caption is on p.72]

[p.73]

54: Cook G,T-5 (1777) 1967 OU9 Tonga OU9

In the morning of the 23rd as we were going to unmoor in order to leave the island Feenough and his prime Minister Tapah came along side in a sailing Canoe and informed me they were going to *Vaugh waugh* an island which lies about Two days sail to the north ward of Happi, to get some red feathered caps for me and Omai to carry to Otaheite where they are in high esteem.[1] Feenough said he should be back in four or five days and desired I would not sail till his return when he would accompany me to Tongatabu. I thought this a good oppertunity to get some knowledge of Vaughwaugh and proposed to him to go thither with the Ships, but he seemed not to approve of this and by way of deverting me from it, told me there was niether harbour nor anchorage about it, I therefore consented to wait his return where I was and he immidiately set out.[2]

SATURDAY 24*th*. The next day our attention was for some time taken up with a report the Indians industerously spread about that a Ship like one of ours was at anchor in the Road of Anamocka. What helped to give some credit to this report was Toobow the Chief of that island hastening thither to receive these new comers as the propagators of the report were pleased to tell us, and as we knew he had but just left us we were the more ready to believe it. However to gain some further information, I went a shore with Omai to look for the man who brought the first account of it from Anamocka; we found him at the Cheifs house, where Omai put such questions to him as I thought necessary and the answers he gave were so clear and satisfactory that I had not a doubt of the truth. But just about this time a Cheif of some note and one whom we knew arrived from Anamocka and declared that no ship was nor had been there sence we left it. The man who propagated the contrary report sliped out of the way so that we saw him no more. Thus the whole appeared to be a story artfully invented to answer some end or other, but what is not easy to conjecture, unless it was to get us removed from the one island to the other.[3]

Conception, & had any man of less Humanity than the Capt[n] Cook & Clerke Commanded, many of these people must have lost their life, from the daring attempts they were hourly making on us.'—Martin, 23 May.

[1] The island was Vava'u, about 60 miles NNE of Ha'ano, and the centre of Finau's power. 'Finow's business thither was to procure red feathers, which were become a valuable article of traffic; our people giving any price for them, on a supposition that they will turn to good account when we arrive at Otaheite.'—Burney, 23 May.

[2] Finau was here guilty of a thundering lie, for Vava'u has in the deep, winding, and beautiful inlet of Neiafu what is in some respects the best harbour of the group. True, Cook would not have found the holding ground very good, but it is a pity he did not see the place. Most chiefs, it may be noted, were only too anxious to add to their importance by getting Cook to their own islands.

[3] This suggested reason may very likely have been the true one. Cook had previous experience of such a story at Raiatea in June 1774 (II, p. 427), when Banks and Furneaux

54: Cook G,T-5 (1777) 1967 OU9 Tonga OU9

seem to regard it. As we saw no signs of its bad effects, probably their way of living greatly abates its virulency. We observed several who had ulcers upon different parts of their bodies, some of which had a very virulent appearence, particularly those in the face which were shoking to look at; on the other hand some seemed to be cured and others in a fair way, but this was not effected without the loss of the nose or best part of it. But this cannot be the effect of the Veneral as they were subject to it before the English vesited them, unless they had the veneral desease before which they say not.[1]

Traffick No Nation in the world understand Traffick or Barter which they call *Fagatou*[2] better than these people, neither are there perhaps any Indians that traffick with more honisty and less distrust, we could always trust them with our good[s] to hand one to another to examine and they put the same confidence in us; if either party repented of the bargen the goods were reexchanged with mutal consent on both sides. At first we imagined their knowlidge of trade might rise from their traffick with the neighbouring islands, or with one another; but we were afterward assured that they had little or no traffick either amongst themselves or with any other islands except Fidgee from which they get red feathers and a few other articles mentioned before. It is at this island those few earthen Vessels we have some times seen among them are made.[3]

Manufacture The principal Manufacture in these islands as well as many other in this sea is their cloth, the making of which is very minutly discribed in Hawksworths Voyages Vol. 2, page 210.[4] But though this Cloth is made of the same Materials as that at Otaheite yet it is of a different nature and the latter part of the process in making is different. After the layers of bark are properly cleaned, they are placed one by the end of another till they are a yard or at the most two yards in length, but seldom bro[a]der than the layer of bark which is about three or four inches. When the fibres are adhered together it is ready for the Mallet with which it is beaten on the smooth side of a piece of wood in the same manner as at Otahiete, till it is as thin as Coarse Gause. Very often they take the layers of

more than one. The *sisifu*, or concubine, had a regulated position and recognised rank

[1] Once more, from this description, one suspects yaws. But skin ulcers, extremely unpleasant to look at, might arise from a variety of causes in the islands, even from an untended cut or coral scratch.

[2] *fakatou*.

[3] Cf. II, p. 265, n. 6. Twentieth-century archaeology, it may be added, is finding traces of the potter in the most unlikely islands.

[4] From Banks's description; see also Banks's *Endeavour Journal*, I, pp. 359–60. Cook's own brief description will be found in I, pp. 132–3. The journal-keepers found it very hard to refrain from describing *tapa*-manufacture; and indeed it is a fascinating thing to watch. The Tongans are still extremely adept.

443 built a store and hired one of the villagers to run it. In about 1925 the third store was built and run by a villager, and twice since that time other villagers have maintained stores. There have been five stores since 1908 but none has run concurrently with any other, and the presence of at least one store has been nearly continuous. This time distribution might be evidence that more than one store could not be supported by the village.

443 438 [464] The current store owner has a full-time wage labor job in Nuku'alofa and gardens for most of his family's food; his wife runs the store. The store is not kept open continuously but is opened at almost any time a customer wishes to make a purchase except on Sundays. Merchandise is [494] [493] acquired at larger stores in Nuku'alofa in small enough quantities so that the owner may transport them from Nuku'alofa by bicycle. The inventory consists primarily of sugar, flour, tinned meat and fish, candies, tabacco products, and a number of small household items such as batteries, thread, razor blades, and needles. Two other important items are kerosene and soap products.

[452] The store owner allows credit purchases for some members of the community up to a maximum of $T5.00. Store inventory fluctuates considerably and villagers do not rely upon it for that reason they buy large proportions of goods at larger stores in Nuku'alofa. An analysis of buying patterns for twenty households using sample A showed that 6.65 percent of the goods purchased were purchased at the local store.

431 Such a transaction is a process in which the gift can be either solicited or offered, but soliciting a gift implies a stronger obligation to reciprocate than does a gift freely offered.

426 Borrowing is based on the same transaction as just discussed and is only distinguished by the fact that the item solicited is returned. The Tongan verb nō is translated as 'to borrow'. This is the mode of transaction which plays a dominant role in the circulation of durable and/or capital goods such as gardening tools, looking utensils, and fishing paraphernalia.

Another from of borrowing is a collateralized loan. Fakamo'ua is and type of loan but is primarily used to describe a loan backed by collateral; it is also the term used for a charge account in the context of market transactions. The collateralized loan is a relatively rare form of transaction but an example is as follows: Palu needed a pig to meet his obligations for the funeral of a high ranking relative. He had no pigs at that time so he went to his neighbor and asked to borrow one. The neighbor agreed to loan Palu a pig, but only if Palu would agree to bring two tapas and also pay $T10.00 at the end of a month. Palu agreed, brought the tapas, and took the pig. At the end of the month he paid his neighbor the agreed amount for the pig and reclaimed his tapas. This form of transaction is obviouly based more on distrust than trust and is, therefore, antithetic to the principles involved in most reciprocity transactions.

437 438 Balanced reciprocity or trade is also a rather rare form of transaction and is almost completely limited to the context of group exchange.

437 Group exchanges between villages are fairly common late in the year and
438 women are always the major participants. A group of women (kautaha fe-
628 fine) will form several months before the exchange and begin preparations; usually this involves the production of handicrafts or raising money to purchase the desired items. The details of the exchange are most likely arranged by a person or persons with kinsmen in the other
[574] village. The exchange takes place in the context of a visitation with feasting and singing being important ingredients.

These group exchanges also seem to take on the function of providing rural isolated villages with items available through the market economy and providing groups from urban areas with more traditional forms of wealth to which they no longer have unlimited access. Couper (1968)
[171] found this pattern to be strongly developed in Fiji where urban dwellers were providing their country-kin with Western items and receiving traditional, indigenously produced goods.

437 In Tonga I was only able to record detailed information on one such
438 exchange. The exchange involved a village near Nuku'alofa, Tongatapu,
177 having high access to Western goods and a village in the Ha'apai group,
628 which is one of the more isolated areas in the Kingdom. The Tongatapu
[574] group made the one-day trip by boat to Ha'apai and stayed for four days. At the conclusion one of the women from Tongatapu married a Ha'apai man, but that is not a typical feature of group exchanges.

The Tongan term for 'trade' is fefakatau'aki, or 'to trade' is fai fakatau. The items being traded are termed kātoanga, kātoa meaning 'all' or 'the entirety'. The exchange usually takes place outdoors and the

two groups of goods are stacked on the ground. Speeches are appropriate before the exchange with each group praising the offerings of the other.

Below I have listed the items exchanged on the occasion mentioned earlier.

Tongatapu Village Gave	Ha'apai Village Gave
300 sheets of 9-foot corrugated iron	11 40-foot fibu 'fine mats'
21 full length tapas	24 15-foot " "
24 bars of laundry soap	38 12-foot " "
1 box of cabin biscuits	29 10-foot " "
1 sewing machine	67 single thickness mats
12 dinner plates	40 papa 'floor mats'
2 bed covers	8 ta'ovala 'woven waistbands'
piece goods	200 salt fish
$T26.00 in cash	2 goats

With the exception of the tapa given by the Tongatapu group, all of their goods were non-traditional items available through the market economy. All of the Ha'apai goods were indigenously produced, and the bulk of the goods were fine mats, a traditional item of wealth and prestige.

Redistribution

First fruits (polopolo) are given to nobles and high ranking female relatives, both sisters and fathers' sisters. This is particularly appropriated at the time of the first harvest of a yam garden (pa'ala), but also for other garden products, fish, and meat. In pre-contact Tonga a society-wide system of redistribution was based on the giving of first fruits, collected and dispensed at an annual religious ceremony (Sahlins 1950: 24-25). In modern Tonga redistribution exists in the

245 is found on almost all bush allotments, planted either in systematic rows or in a random fashion, in varying numbers on most town allotments, as well as growing naturally along the coast. Numerous kinds of coconuts are known to Tongans, the most common varieties being niu kafa, niu mea, niu matakula, niu ui, niu'utongau, niu mea'alava, niu leka and niu ta'okave. Very little scientific selection of high yielding varieties is practiced, the planting material in most cases consisting of suitable fallen nuts. With the establishment of the Coconut Replanting Scheme, however, new varieties from Sri Lanka were introduced and nurseries were established to improve selection of local planting material. Coconut palms are planted throughout the year, take from seven to ten years to come into bearing, and bear fruit through out the year.

244 Watermelon - meleni (Citrullus vulgaris). The watermelon, which is native to the Kalahari Desert of Southwest Africa (Herklots, 1972: 314), was possibly first introduced into Tonga by Captain Cook on his second voyage (Beaglehole, 1969: 262). It is Tonga's third most important export crop, is a major item at the local market, and is grown on bush allotments throughout Tongatapu on a commercial basis. There are two kinds of watermelon commonly grown, the "Ice Cream" and "Market Wonder," both of which are referred to as meleni by Tongans. Although the "Ice Cream" is sweeter, the "Market Wonder" ships

244 better and is favored for export (Johansson, c. 1956: 3).
[439] Although melons are planted throughout the year, the best planting time is from May to August during the drier part of the year. At this time, there is a lower incidence of fungal diseases and other pests and the melons tend to be sweeter. Watermelons take about three to four months to mature with the largest harvests occurring from August
[438] through December. Planting material consists of seeds purchased either through stores in Nuku'alofa or from the Produce Board.

245 Pineapple - fainā (Ananas comosus). The pineapple is of tropical American origin (Prevost and Pitkanen, 1970:58), and was an early European introduction, probably by Cook on
[438] his second voyage in 1773 (Beaglehole, 1969: 262). It is
[439] grown in large patches throughout Tongatapu for export and local sale, as well as being intercropped with other crops on both bush and town allotments. The two most common varieties are the "Rough" and the "Ripley Queen", known locally as fainē Tonga (Tongan pineapple) and the pia respectively. The Ripley Queen is favored for export owing
[439] to its larger size (Johansson, c. 1956: 3). The optimum planting season for pineapple seems to be from September through December; the plants begin to bear in about 14 months and are most abundant from September through January.
[242] Some farmers have been producing crops throughout the year by treating the plants with a hormone. Planting material

245 consists of suckers from mature plants or the leaf-bearing portion of the fruit.

244 Peanuts or groundnuts - pinati (Arachis hypogaea). The peanut, which is thought to be native to South America (Baker, 1970: 56), is a post-European introduction (Massal and Barrau, 1956: 30). It has been grown in Tonga for a [438] [439] number of years and, although a concerted attempt was made after World War II and in the early 1960's to establish it as an important export crop, it is now grown primarily for local sale by street vendors in Nuku'alofa. There are two main varieties recognized by Tongans, the foua or two-seeded variety and fo tolu or three-seeded variety. Although no reliable data on planting and harvesting dates could be obtained, it seems that there are two different planting times for peanuts, September and January; the plants take three to four months to bear depending on the variety and are reportedly harvested in January and May.

Tomato - temata (Lycopersicon esculentum). The tomato, native to western Peru and Ecuador, is a comparatively [439] recent European introduction (Herklots, 1972: 360-161). In 1971, it was Tonga's number four export crop after coconuts (and coconut products), bananas, and watermelons respectively. It is becoming an increasingly common addition to the cropping complexes on bush allotments throughout [438] Tongatapu. It is also a major item at the market in Nuku'alofa and is often grown for home use, along with

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[438] other garden vegetables, in small plots on both bush and town allotments. Medium sized red tomatoes are most common, although the smaller cherry tomato is also found, often growing wild in ruderal places. Tomatoes and most other garden vegetables are planted beginning in April or May (following the hot, rainy season) and are harvested starting in May through November or December. Some farmers, however, have been able to grow them for local sale on a year-round basis. Seeds are generally purchased from the large trading stores in Nuku'alofa or from the Produce Board.

Bell pepper or capsicum - polo or polo palangi (Capsicum annuum). Bell pepper is a post - European introduction from tropical America (Herklots, 1972: 350). Like the tomato, it is rapidly becoming an important commercial crop for export and for local sale and an increasingly common addition to the crops grown on bush allotments. Planting and harvesting times, acquisition of planting material, etc. are the same as for the tomato.

Other introduced Vegetables. There are a number of other vegetables, most of comparatively recent introduction, which, although of minor importance, have been exported from time to time to New Zealand, Fiji, or Samoa and are currently sold locally at Talamahu Market. These vegetables include: green beans - pini (Phaseolus vulgaris), native to Central America; European cabbage - kapisi (Brassica oleracea var. capitata), carrots - kaloti (Daucus carota)

244 and beets - pitiluti (Beta vulgaris), all native to Europe or the Mediterranean; lettuce - letisi (Lactuca sativa) and bulb onions - onioni Palangi (Allium cepa), both native to the Middle East; cucumbers - kiukamipa (Cucumis sativus) and eggplant - paigani (Solanum melongena), both native to India; Chinese cabbage - kapisi Siaina (Brassica chinensis and B. pekingensis), native to China; and radishes - latisi (Raphanus sativus), native to Europe and Asia (Herklots, 1972). Most of these are grown infrequently, and are generally in season at the same time as [438] tomatoes and bell peppers. The seeds are purchased primarily from large trading stores.

245 Vanilla - vanila (Vanilla planifolia). Native to [439] Mexico (Macmillan, 1956: 330), vanilla has been successfully introduced into Vava'u where it has now become an important export crop. Within the past few years, a small number of Tongatapu farmers have also planted vanilla on their bush and town allotments. It is generally planted using the physic nut or fiki (Jatropha curcas) to climb on. As of yet, it is of little or no economic importance on Tongatapu.

241 Supplementary Food Plants

In addition to staple food plants and commercial crops, there are a considerable number of supplementary, non-arborescent food plants commonly grown on bush and town allotments throughout Tongatapu. These crops include:

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243 Corn or maize - koane (Zea mays). Corn or maize, a native of Mexico (Herklots, 1972: 384), was introduced after European contact (Massal and Barrau, 1956: 44). [439] [438] Although being exported on a limited basis, it is primarily a subsistence crop as well as being sold at the local market. It is found on many bush and town allotments throughout Tongatapu, planted either alone or intercropped with yams, taro and other subsistence crops.

245 Edible hibiscus - pele (Hibiscus manihot). Pele, probably native to the Southwest Pacific (Massal and Barrau, 1956: 35) is a form of edible hibiscus, growing about three to five feet in height. [262] [252] It is an important green vegetable source (the leaves being cooked like spinach with or without coconut cream), is easily cultivated, and is commonly found throughout Tongatapu on both bush and town allotments. Two kinds, pele hina and pele kula, are commonly recognized by Tongans, the former being the more common.

Papaya or pawpaw - lesi (Carica papaya). Of tropical American origin and post-European introduction (Barrau, 1971: 5), the papaya is a ubiquitous plant which provides the most common fruit on Tongatapu. It grows on almost all bush and town allotments in both wild and cultivated states and is a dominant species in many secondary vegetation communities. There are a number of varieties recognized by Tongans, the most common being lesi Tonga, lesi meleni and lesi 'Initia.

000 and lesi 'Initia.

249 Sugar cane - to (Saccharum officinarum). The sugar cane, believed to be of New Guinea origin, was present in [439] Tonga before European contact (Barrau 1971: 18). It is exported in small quantities, but is primarily a traditional subsistence crop grown on both bush and town allotments. The most common varieties recognized locally are au, to hina, to kula, and heleveka.

Kava (Piper methysticum). Kava, a traditional pre-European plant, is probably a native of the western Pacific. The roots and branches are made into the traditional Tongan social beverage of the same name. The plants, which take more than two years to mature and improve with age, are found on many bush and town allotments.

244 Green onion or shallot - onioni Tonga (Allium ascalonicum). The green onion is native to the Northern Hemisphere, possibly Eurasia (Herklots, 1972: 387), and is [438] probably a post-European contact introduction. It is common at the local market and is grown on many bush and town allotments throughout Tongatapu, either alone in vegetable gardens or intercropped with other subsistence plants.

Pumpkin - hina (Cucurbita pepo) - The pumpkin, of American origin, was reputedly introduced by Captain Cook. It is grown on many allotments, generally intercropped with other crops as well as growing wild in a somewhat

244 naturalized state.

245 Passionfruit - vaine or vaine Tonga (Passiflora edulis). Passionfruit, a native of tropical South America and of post-European contact introduction (Merrill, 1945: 152), is commonly grown on town allotments on trellises or trees as well as growing in a naturalized state in the [438] bush. It is occasionally sold at the market in Nuku'alofa.

Granadilla - pasione. (Passiflora quadrangularis). The granadilla, also of tropical American origin and post-European contact introduction, is commonly found growing on trellises on town allotments, and occasionally on bush allotments.

[262] Ladyfinger-misapeka (Musa clena). This dwarf banana, which was introduced into Tonga by Shirley Baker in the 1870's (Rutherford, 1971: 54), is infrequently cultivated on Tongatapu and is eaten in a ripened state as a fruit.

[262] Cordyline - si (Cordyline terminalis). Si, native to the Southeast Asian - Pacific region and present before European contact (Barrau, 1971: 21), is found both as an ornamental and as a cultivated or naturalized edible variety (sometimes referred to as si kai), which, although very common, is eaten only sparingly or in times of food shortage. It is found on most bush and town allotments, in many cases overrun by bush.

244 [262] Cherry tomato - temata vao (Lycopersicon esculentum var. cerasiforme). This variety of the common tomato,

434 Table 21. Number of times specified items were listed as being commonly purchased at small village stores (based on 120 questionnaire responses).
438

Bread	90	Onions	8	Lard	3
Soap	84	Cocoa	7	Toilet Paper	3
Sugar	82	Jam	7	Face Powder	2
Kerosene	74	Canned Milk	6	Perfume	2
Salt	60	Candy	6	Baking Powder	2
Tinned Fish	57	Razor Blades	6	Watermelons	2
Flour	54	Tea	5	Buns	2
Matches	41	Hard Biscuits	5	Pepper	1
Tinned Beef	35	Thread	5	Coffee	1
Mutton Flaps	34	Starch	5	Needles	1
Cigarettes	31	Batteries	5	Aspirin	1
Bleach	20	Laundry Soap	5	Cheese	1
Butter	27	Soda pop	5	Soup	1
Curry Powder	20	Material	4		
Tobacco	14	White Gas	3		
School Supplies	12				

439 [824] [237] The exported handicrafts and curios include plaited ware, tapa cloth, leis, necklaces, slippers, or skirts made primarily with local plant materials. A small proportion, however, consist of sea shells and other objects collected from the surrounding reefs.

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438 Table 22. Number of times specified items were listed as being commonly purchased at large trading stores in Nuku'alofa (based on 120 questionnaire responses).

Clothing & cloth	91	Wash boards	5
Mutton flaps	43	Ice cream	5
Fresh or frozen meat	31	Wholesale goods	5
Garden tools	29	Cosmetics	4
Cutlery	27	Sun glasses	3
China	23	Lard	3
Shoes	21	Seeds	3
Cooking ware	19	Paint	3
Knives	18	Bicycles	3
Cane knives	16	Furniture	3
Tinned food	11	Alcoholic beverages	2
School supplies	11	Umbrellas	3
Cups, glasses	9	Toys	2
Rope	9	Carpets	2
Radios	7	Steam irons	2
Sausages	7	Skindiving supplies	2
Carpenters tools	7	Sewing supplies	2
Nails	7	Beds	2
Wash tubs	7	Towels	2
Stoves	7	Sporting goods	2
Axes	6	Chicken feed	1
Fishing gear	6	Refrigerator	1
Timber	5	Blankets	1

Table 22. Continued.

Table cloth	1	Fertilizer	1

The fungus, Auricularia polytricha, which is exported to Hong Kong, is classified as an agricultural product by the Tongan Government, and although most of it comes from the island of 'Eua, some is still found during rainy periods on dead logs in forested areas of bush allotments on Tongatapu.

At present there is a concerted effort being made by the Agricultural Department and the Tonga Commodity Boards to diversify and increase agricultural exports in order to stabilize the economy. These efforts have increased production of garden vegetables, pineapples, watermelons, root crops, and, more recently, vanilla. Nevertheless, the major export crops continue to be coconuts and bananas.

Unfortunately, the market for copra is highly unstable, and both crops are susceptible to disease, pests, hurricanes, and periodic droughts. In the case of bananas, exports depend on unreliable shipping services to New Zealand. Nevertheless, coconuts and bananas are still the major commercial crops found on the traditional bush allotment. Consequently it is important to have some background on the production of these crops.

Copra and Other Coconut Products

Prior to World War II independent traders throughout

[TEXT CONTINUED ON PAGE 156]

241 439 [441] [655] on which the bulk of their exports are grown.

Most export produce is, however, shipped through the Produce Board, and a great percentage of this is grown on the individual bush allotments. Vanilla, which is an important export crop in Vava'u, is now being grown in the Ha'apai group and on Tongatapu. Experimental export of cantaloupe (rock melon) and strawberries have also been made, and schemes to export onions, garlic, and corn to Fiji are under consideration. In 1971, to encourage the production of other export crops, a laboratory was established and manned by a trained plant pathologist to study diseases and insects that are prevalent in the Kingdom.

242 439

443 Domestic Agricultural Income

The market place in Nuku'alofa, which began as a collection of periodic street vendors after World War II, evolved into a modern open-air facility known as Talamahu Market, which officially opened in October 1970. The market takes up four acres (1.6 hectares), contains 47 lock-up stalls, 80 tables, considerable floor space for additional sellers, toilets, taxi stands, and a bus depot.

443 438 The market deals primarily in native subsistence produce, mainly staple crops, vegetables, and fresh fruit. It also handles a limited amount of native fiber goods, tapa cloth, native medicine, beverages, spices, and more recently handicrafts. Some prepared food, firewood, shellfish, live pigs, and chickens are also sold outside the walls of the

443 market. Exchange is generally on a cash basis. A [illegible]ism.
438 The market is open every day except Sunday, Saturday
[436] having the heaviest trading. On one Saturday, an estimated
350 sellers were present and approximately 2,000 buyers, who
443 purchased about $T3,000 worth of produce. Including non-
buyers and socializers, people present may have totalled as
many as 5,000 or approximately ten percent of Tongatapu's
443 population. A great variety of agricultural products are
438 sold at the market (Table 27). Some items such as rhubarb,
[244] okra, parsley, and certain varieties of squash are marketed
[241] solely by well-organized truck gardening operations,
[795] including the Mormon Church, but most items are grown
primarily on bush or town allotments. Most sellers are part-
443 time or target marketers, who sell only when they have
surplus agricultural products or are in need of cash for a
[444] specific purpose. The balance of the sellers, no more than
25 percent, are either representatives of co-operative
societies and missionary societies or middlemen who buy
products from individual farmers and serve as retailers.

443 In short, the market is: 1) a source of cash for rural people;
438 (90 percent of the sellers in the market during a study on
January 22, 1972, were from outside Nuku'alofa); 2) an
important food source for the increasing urban/non-agrarian
population of Nuku'alofa (approximately 85 percent of the
food purchased was purchased by consumers in the Nuku'alofa
area); 3) an important source of firewood, Tongan medicine,

[TEXT CONTINUED ON PAGE 174]

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Table 27. List of agricultural produce sold at Talamahu Market from February 1971 through January 1972.

STAPLE CROPS	
Yams	Sweet potatoes
Goa yams	Manioc
Swamp taro	Green bananas (*siaine* variety)
American taro	Green bananas (*pata* variety)
Giant taro	Green plantain
Potato	Pumpkin
Breadfruit	Mature coconuts

VEGETABLES	
Taro tops	Leeks
Hibiscus leaves	Chinese cabbage
Onions	Peas
Green onions	Carrots
Tomatoes	Capsicum
Cucumbers	Peanuts
Cabbage	Okra
Lettuce	Squash
Radishes	Parsley
Green beans	Chard
Yard-long beans	Beets
Sugar cane	Rhubarb

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Table 27. Continued.

Bottle Gourd

FRUIT

Ripe bananas (*siaine* variety)	Pineapple
Ripe bananas (*mamae* variety)	Watermelon
Ripe plantain	Cantaloupe
Oranges	Roselle
Lemons	*Pometia pinnata*
Limes	Polynesian vi-apple
Citrons	Mango
Mandarins	Avocado
Grapefruit	Soursop
Papaya	Passionfruit
Other citrus	Malay apple
Granadilla	Tahitian chestnut

MISCELLANEOUS FOOD ITEMS

Eggs	Shell fish
Chickens	Fungus
Pigs	

SPICES

Ginger	Chile peppers

443
438

Table 27. Continued.

BEVERAGES, STIMULANTS AND MEDICINES

Green coconuts	Tongan medicine
Kava	Tobacco

MISCELLANEOUS NON-FOOD ITEMS

Polynesian arrowroot	Banana leaves
Coconut midribs	Bamboo
Brooms	Coconut oil
Yam seed	Kapok
Firewood	

HANDICRAFTS

Flower leis	Plated hats
Pandanus baskets	Plaited slippers
Coconut baskets	Tapa cloth
Wood carvings	Pandanus mats
Grass skirts	Seed leis
Serving trays	Bamboo curtains
Tablemats	Brooms
Pandanus fruit	Hibiscus cordage
Pandanus leaves	Paper mulberry
Tapa dye	

443 and other non-food items and raw materials; and, 4) an out-
438 let for surplus export crops. This last function is of
[439] considerable importance owing to the undependability of both overseas markets and transportation; surpluses of melons, pineapples, bananas, and European vegetables are sold at Talamahu Market at reduced prices rather than being wasted.

443 The Talamonu Market, a smaller satellite market, was
656 established in Nuku'alofa to escape government regulations adhered to at Talamahu Market, such as washing root crops
443 which renders them more perishable. It has similar functions to the Talamahu Market, but on a much smaller scale and has a narrower range of products.

443 Cash sale of agricultural produce and animals in the
438 villages and rural areas includes the occasional sale of baskets of yams, taro, giant taro, or watermelons; the butchering and sale of cows or horses; and the sale of drinking coconuts, mangoes, tava, and vi-apples along the main roads. Vendors along the main streets of Nuku'alofa also sell drinking coconuts, sugar cane, peanuts, and seasonal fruits.

Although pigs and chickens are often sold at Talamahu Market as well as in the villages, the Vuna Government Market in Nuku'alofa is the major outlet for fish or meat. In 1970 and 1971, 166,926 and 160,771 pounds respectively were handled by the market (Government of Tonga, 1972b:15).

443 The sale of Tongan handicrafts is also a major source
438 of domestic cash income. Handicrafts, which include items such as tapa cloth, pandanus mats, pandanus and coconut
443 leaf baskets, seed necklaces, flower leis, and wood carvings
438 are sold through a Tongan woman's co-operative marketing
439 organization, the Langa Fonua, at Talamahu Market and other
441 locations in Nuku'alofa, in special stalls set up on the
485 government commons on days when passenger liners are in port and select locations near points of interest to sight-
443 seers throughout Tongatapu. Although some handicrafts are
438 exported to Fiji, New Zealand, Australia, American Samoa
439 and the United States, more are sold locally.

Labor Organization

241 Out of 126 sample households with bush allotments,
461 there were 198 males whose primary occupation was working on these allotments. The average work per week was 23 hours
241 per man and 36 hours per household. Although these men
476 mostly worked as individuals or with family members in small
[461] groups, the figures also include the hours of work in organized communal groups or as wage laborers on agri-cultural allotments. For tasks such as clearing bush, planting crops, harvesting, making tapa, or building houses, many Tongans prefer to work in communal groups rather than as individuals or households.

[621] The most common working group is known as the kautaha

Grazing occurs mainly on hereditary estates or lease-holdings, and out of the sample of 101 bush allotments only one had any grazing land, approximately 3 acres (1.2 hectares). Like some of the larger plantations, the allotment was partially fenced, was well planted with coconut palms and scattered citrus, and other useful trees with an understory dominated by Paspalum conjugatum (vailima), Elephantopus mollis, Psidium guajava (kuava), Stachytarpheta urticaefolia (iku'ikuma), and Dryopteris invisa (hulufe). The practice of setting aside pasture land will possibly become more common as a result of initiation of the Cattle Subsidy Scheme in 1971.

With respect to cultivated land, it was often difficult to differentiate between subsistence and commercial crops. Bananas, watermelons, pineapples, garden vegetables, and peanuts are grown primarily for export or local sale but are occasionally cultivated for home use. Conversely, many of the important subsistence crops, such as yams, taro, plantains, and even manioc are often produced for export and local sale. In order to simplify the already complicated inventory scheme, it was decided to tabulate as commercial crops all species such as bananas, watermelons, and pineapples, that are commonly grown commercially and to tabulate yams, taro, manioc, etc. as subsistence crops. On this basis, of the total acreage of 101 sample allotments, 30 percent was in subsistence

137 Among the species that were most favored for milling are:
313 tavahi (Rhus taitensis), toi (Alphitonia zizyphoides), tangato (Pleogynium solanderi), telie (Terminalia catappa), feta'u (Calophyllum inophyllum), fao (Ochrosia oppositifolia), mo'ota (Dysoxylon forsteri), ma'ama'alava (Elaeocarpus tonganus), and kotone (Myristica hypargyraea) (Government of Tonga, 1961: 13).

In addition to lumbering, the need for firewood has
[439] also made heavy demands on the tree population. One of the major items sold at Talamahu Market in Nuku'alofa is firewood and on one Saturday the following species were being sold (starting with the most abundant): tongo (Rhizophora spp.), sialemohemohe (Leucaena leucocephala), koka (Bischofia javanica), toi (Alphitonia zizyphoides), loupata (Macaranga harveyana), tavahi (Rhus taitensis), ngatata (Elattostachys falcata), ifi (Inocarpus edulis), tava (Pometia pinnata), mango (Mangifera indica), and orange (Citrus sinesis).

Nature of Fallow Areas

241 The survey of 101 sample bush allotments was also
125 concerned with the extent, age and species composition of fallow vegetation. Prior to the survey, selected Tongan farmers were asked about the ages of different fallow areas and within each area the plant species were noted. This showed that a reasonably accurate estimate of the length of the fallow period could be based on species composition

CHAPTER VI

CONCLUSION

128 The purpose of this chapter is two-fold: 1) to summarize the findings on the nature and importance of the Tongan agricultural system as practiced in bush and town allotments in 1971 - 72; 2) to suggest trends or developmental paths that the system is likely to follow.

241 ## Nature and Importance of the Agricultural System

241 463 The importance of agriculture in Tonga cannot be overemphasized. At the 1966 census, 67 percent of the Kingdom's males over 15 years of age were either directly or indirectly employed in agriculture, with 64 percent being directly involved in agricultural production for household consumption (Fiefia, 1968 : 74). Similarly, the results of the questionnaire survey of households on Tongatapu indicated that 53 percent of the heads of 150 households were full-time farmers, 15 percent part-time farmers, 24 percent wage-earners, and 8 percent unemployed. Of the wage-earners (the majority of whom live in Nuku'alofa), 58 percent practiced 241 439 some gardening on their bush allotments. Agricultural products accounted for more than 97 percent of Tonga's export earnings in 1971 (Government of Tonga, 1972a).

241 438 443 One further measure of the importance of the agricultural system is the rapid expansion of trading at Talamahu

241 438 443

Market, Nuku'alofa, which is probably visited by more than 10 percent of the entire population of Tongatapu on an average Saturday. With the exception of garden vegetables grown by large growers on leasehold land and limited produce from other islands, almost all produce and processed goods come either directly or indirectly, as in the case of handicrafts and folk medicines, from the bush and town allotments on Tongatapu.

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Bush Allotments

Survey results indicated that 34 percent of the area on bush allotments was under cultivation during the 1971 - 72 period. This figure would be somewhat higher if uncultivable rocky and swampy land found on numerous bush allotments is excluded; Hardaker's (1971 : 63) estimate of 36 percent shows close agreement.

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Of the cultivated land, 87 percent was devoted to subsistence cultivation, 11 percent to commercial cropping, and the balance to a combination of the two. On only one of the 101 sample allotments was there any grazing on natural pasture. Of the subsistence acreage, the most widespread crop was manioc (Manihot esculenta) comprising 37 percent of the total acreage. It was followed by American taro (Xanthosoma spp.), 23 percent; yams (Dioscorea alata), 21 percent; and then by swamp taro (Colocasia esculenta) and sweet potatoes (Ipomoea batatas). Other

[311]

241 244

244 178 [438] potato (Ipomoea batatas). These crops, all of which were infrequently cultivated before the turn of the century, now have become the most common items sold at Talamahu Market, and manioc and American taro were the two most widely cultivated crops in terms of acreage.

241 178 Increased Cash Cropping

There will probably be a continued expansion of cash cropping to supply both overseas markets and the expanding [242] [654] urban population on Tongatapu. The major focus of government extension work is the expansion of commercial cultivation of bananas, coconuts, and a variety of other established crops such as watermelon, pineapple, garden vegetables, and root crops; and experimental crops such as [435] macadamia nuts, onions, strawberries, and garlic. The rising prices of products at Talamahu market is also a major incentive for an increase in commercial production of both traditional and recently introduced crops.

434 439 178 000 Increased Cultivation of Crops Used for Handicrafts

With the rapid expansion of tourism throughout the Pacific, there is a great demand for the high quality Tongan handicrafts both in Tonga and overseas. Consequently, there could be a considerable expansion in the cultivation of plants such as paper mulberry (Broussonetia papyrifera), pandanus (Pandanus spp.), Job's tears (Coix lachryma-jobi), and bamboo (Bambusa sp.).

/99 cont./

276 [171] and Fiji, for example, where this custom has also been preserved. Kava is, without reservation, the essential element of community life in Tonga.

[249] [438] Kava (Piper methysticum) is still planted on all Tongan islands However, on a few it is scarce (as a result of reduced planting, too great consumption or destruction by pits), and the kava roots are obtained from other islands of the Archipelago, often by the bag, at five ℛ a bag (approximately 47 German marks), or are bought by the piece in (retail) shops in the village. When people want to drink kava they take a few roots and go to a house in the village that seems appropriate (with regard to owner and space) and ask if kava might be made. Or, if one or several friends happen to be in a person's house, its preparation is immediately begun, generally /100/ by a young girl (or a woman), more seldom by a man. This girl pounds the root between stones (maka toto lalo and maka toka 'olunga) over a mat (fala tuki kava) and pours the coarse flour thus obtained into the kava bowl (kumete kava). The bowl is the most important piece [415] of property of every household; it is artistically carved out of a [322] block of wood and has a diameter up to one meter and four to sixteen [439] /sic/ feet. Many of these bowls come from Fiji, but they are also made in Tonga on most of the islands, chiefly on 'Eua. As needed [415] (depending on the quantity of kava meal), water dipped from a zinc bucket standing in readiness is ladled out with a coconut shell (ipu kava) and poured onto the meal in the bowl. The meal is kneaded in the water. Then with a bundle of bast (fau tau kava) (from fau = Hibiscus tiliaceus) they take the remnants of kava out of the liquid, wring out the bundle with a firm grip over the bowl and shake the squeezed-out residue (which, after drying, is sometimes used a second time) onto the mat. With the bast bundle a portion of the now finished kava drink is taken out of the bowl and the coconut cup

/153 cont./

241 198 461 [197] way he has to walk from the village, he can no longer devote himself to it as intensely as in the 18th century; secondly, many natives seem to have lost their joy in the work of cultivation. This is the outcome of European influences, as a result of which much hand work has apparently become crude or has been lost altogether. The "liberation" of commoners from the domination of chiefs, as well as the realization that one is no longer completely dependent on cultivation, since flour, meat, sugar, etc. can be bought from the storekeeper on all the islands, may likewise have determined the present attitude toward plantation work.

241 [262] [431] The majority of Tongans consume their cultivated products by themselves, within their own families. At a request, or even on their own initiative, they will sometimes give of their yield--especially if there has been a good harvest--to other villagers (not only kinfolk), as in old times. On the small islands they do not, as a rule, sell their produce to fellow-villagers, and in the villages of the larger islands, only occasionally. In the larger towns of Nuku'alofa, Neiafu and Pangai, however, some Tongans sell their tubers, etc. to their countrymen who have no plantings or only small ones (for example, government and business officials); some natives on the larger islands have even started planned cultivation for such purposes (for example, "yam farms"). The handing-over of produce to chiefs, which in ancient Tonga was taken for granted, has been given up almost entirely and has been superseded by the annual payment for the lease of land; a native but only seldom on special occasions, will a native bring the chief of his district a gift of select tubers. The old, larger harvest festival (inasi), the offering of first fruits to the gods, (406)

241 438 184 432 241 565 178 427 651 431 241 796 198

406. See E. Gifford, Tongan Society / cited in English/ pp. 76, 345.

/215 cont./

285 off (all around) in one strip. After it has dried in the sun for
283 about two days /216/ the white bast (= on the inner side of the re-
824 maining bark) is removed. This the women (girls) divide into narrow strips and therewith knot the mana fau which is actually only a strand of bast slung around the hips, from which the bast fibers, knotted to it in close succession, hang down to below the knees.

kie-kie lou fau:

292 The kie-kie lou fau is worn especially by women and girls, though sometimes also by men. They wear it instead of a ta'o-vala
(164) to church, when visiting chiefs, for festivals and other occasions,
(574) and for dances (laka-laka, ma'ulu'ulu, hula hula, tau'olunga, hula,
(535) ulu); they also decorate fresh graves with it.

285 This ornamental belt which originated only in recent times (end
292 of the last century?/ is made by women and girls, likewise out of
(462) hibiscus bast, and consists of a plaited belt cord on which are
(824) knotted long, narrow bast strips that hang down. It usually has
(283) special knotted ornaments in the hip section (for example, bast
(197) strips tied into rosettes), and parts of it, in contrast to mana fau,
(386) are always dyed with European dyes (particularly green, lavender, pink, and blue).

kie-kie pueki:

292 This ornamental belt, which is also worn by women and girls
(438) (and occasionally by men) in place of the ta'o-vala, is a typical product of the island of Niua Toputapu situated in the very northern part of the Archipelago. It may be an ancient cultural heritage.

292 The natives there make the kie-kie pueki, like the mana fau, of
237 hibiscus bast (with long pendant bast strips); all around the hip
(283) section, however, they knot snail shells on a band about eight centi-
(285) meters wide. The snail shells, which are whitish-yellow in their
(197)
(386)

/233 cont./

501 small sail (made of European cloth, seldom a mat) for which they put up a small mast. They use the popao to cover the distance between
501 505 islands lying close together, (615)

615. They seldom use the popao for greater distances, as did a Nomukan, for instance, who, in 1951, traveled 14 sea miles with it across the open sea.

for various methods of fishing (see above) and, on account of their slight draft, to board and leave the small sailboats lying at anchor, as well as to load and unload the latter.

396 824 The natives like to make the hull of the popao from the trunk of the breadfruit tree (Artocarpus altilis), but they also use the mango (Mangifera indica L.), the tavahi (Rhus taitensis Guillemin), the toi (Alphitonia zizyphoides [Spreng.] A Gray), the mohe-mohe and, if possible, the tamanu. Men who have particular experience in boat-building, but also those who are doing this work for the first time in their lives, cut the hull of the boat, which is about three to five meters long, out of /234/ one piece of trunk. They also like to
[438] [435] "export" roughly hewn hulls from islands were the aforementioned types of wood occur in greater abundance to islands that are poor in them; on Nomuka, for instance, they pay 10 £T. (breadfruit tree wood) to 15 £T. (tamanu wood) for such an unfinished boat imported from 'Eua.

396 [465] The owner of the boat-to-be may do the work himself, or a man experienced in boat-building who is provisioned or remunerated (who may receive, for examply, 2 £T. or a horse) does the work. Often the [476] men work in twos or threes, with relatives (for example, son, father, son-in-law, father-in-law, cousin), friends or other villagers helping. [462] Boat-building is purely men's work.

396 412 To hollow out the dugout, which has been roughly hewn with axes and transverse hatchets, they use especially the small transverse hatchet toki unga ko (with the gouge blade, see p. 200-202). They also

241 Cash cropping (to be discussed in greater depth later in this chapter) in the bush fallow system can be divided into long- and 241 short-term crops. The principal short-term crops include bananas and 245 a variety of melons, plus miscellaneous plants. Bananas, as [244] described above, may be interplanted in the normal planting cycle. Usually, banana cropping is continued for several years before a 245 plot is returned to fallow. Production from this crop is allocated [262] to household consumption, or sold in local markets. Surveys encoun- [438] tered only an occasional farmer producing bananas for the international [439] export market. Subsequent interviews indicated several limitations on this type of production, such as plant disease and inadequate shipping facilities.

The most severe diseases affecting banana production are black leaf streak, bunchy top, and banana scab moth, the most serious being black leaf streak. Decreases in the production of exportable bananas since 1967, equaling 83 percent of the 1967 crop, have been attributed largely to this particular disease. Leaf streak is a fungal disease, characterized by a dark streaked appearance on the plant leaf (Plate 2).A The disease, by decreasing the total leaf area of the plant, thereby reduces the plant's photosynthetic capacity. The results are smaller fruit, smaller numbers of fruit per bunch, or frequently the complete absence of fruit.

Banana bunchy top is a viral disease, also reducing the photosynthetic area of the plant. It is characterized in the field by the insequential order in which the plant leaves die and the bunched appearance of remaining leaves (Plate 3, p. 74).B Bunchy top

A, B [Because of poor quality of reproductions in the original, plates have not been marked for a Category--Analyst.]

[TEXT CONTINUED ON PAGE 75]

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245 retards the growth and development of the plant, and terminates fruit production.

[136] Banana scab moth, most destructive during its larval stage, may cause damage ranging from simple fruit discoloration to total [242] destruction (Plate 4, p. 74). DDT, which is frequently used to combat scab moth, has been ineffective in annihilating the pest.

241 The combined effect of these three diseases have reduced 245 internationally marketable banana production by nearly 1.5 million [433] dollars, representing approximately 30 percent of total agricultural [439] export production since 1967. Farmers are increasingly hesitant to initiate large scale banana production, unless guaranteed assistance in combating disease and plant destruction.

245 Survey interviews also attributed decreasing banana produc- 505 tion to inadequate shipping facilities. Frequently, harvested bananas are placed on a dock to await the arrival of transport 245 vessels destined for overseas markets. During this time, the fruit 439 becomes over-ripe, falling below export quality. As a consequence, [435] fruit originally priced up to $1.90 per case may be sold for as little as 40 cents. Because of this potential low cash return, 245 many interviewed farmers stated that large scale banana production was an unwise economic risk.

244 Commercial production of melons, especially watermelons, is also hindered by the inadequate scheduling of transport facilities to [505] overseas markets. Melons are also produced for Tongan markets, but [438] frequently earn only low prices, even when out of season.
[435] A [Because of poor quality of original reproductions, plates have not been marked for a Category-- Analyst.]

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241 An
245 aerial analysis of Tongatapu, and a subsequent comparison with
171 Western Samoa, revealed a marked difference in planting and cultivation. Portions of Samoa reveal an orderly planting configuration,
241 suggesting more devoted commercial production of coconuts. Tongan
245 farmers, when questioned about the uneven planting, noted that they can produce much larger tuber crop yields if sunlight is not blocked
245 by closely planted palms. However, loosely defined and enforced Tongan laws requiring palm cultivation, plus the desire for a cash income, have motivated an increasing number of Tongans to plant their entire landholding with coconuts.

245 It was noted in such cases that extensive coconut production
241 is accompanied by smaller gardens and less rotation of crops. This
[438] subsequent reduction of tuber food crop yields is compensated by the purchase of foodstuffs in neighboring village or urban areas. In Ha'apai and the more densely settled portions of Tongatapu, an occasional interviewee reported the necessity of planting entire land
[262] holdings in coconuts to insure a cash income. Increasingly, incomes
[439] from cash crops are providing households with diets of imported foodstuffs, replacing those of traditional crops.

The possibility of subsistence crop production in conjunction with coconut planting is largely dismissed by Maude (1970). While coconut yields can be temporarily improved by the occasional clearing of bush for gardens, the burning of the cut vegetation scars the palm and severely reduces production. In addition, once the planting cycle is complete and fallowing begun, vegetation is allowed to grow around the palms unhindered. This growth not only competes

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

241 Frequ ntly, walking for
461 another hour follows the bus ride. Trans ort of crops from the 'api
484 usually involves greater lengths of time as the common method con-
494 sists of a horse-drawn cart (Plate 9, p. 93).
[481]

Fishing is a second significant activity conducted away from
226 the 'api, although of less concern within the interior of Tongatapu
[461] and along those shores with poor sources or access. In Vava'u and
[262] Ha'apai, fishing often consumes several hours per day, and supplies
[438] not only family food needs, but also enough for sale in local markets.

461 A third major activity concerns church and social functions within the local village or the nearest urban area. Many of these activities are concentrated during the weekends, such as marketing and major church functions. However, social activities during the week require participation of several hours per week.

In addition to the above, an entire range of miscellaneous labor must be considered, due to the low level of specialization of
461 labor in Tonga. Thus, to summarize, it is evident that potential
241 expansion of agricultural production in Tonga involves not only issues of land tenure and management, but also individual incentive, tradition and the amount of time devoted to agricultural activities.

During interviews conducted on all of the major Tongan islands, lack of land was most frequently denoted to be the major limitation upon agricultural expansion, while laziness of Tongan
241 farmers was the second most frequent response. The third most
412 frequent explanation concerned the lack of adequate agricultural tools and machinery. An examination of farm equipment, either owned or rented by the interviewees, indicated that most farmers possess

[Due to poor quality of original, plate has not been marked for a Category--Analyst.]

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

231 TABLE 15.--Livestock Owned by Tongan Households: Sample of 265.

	Households Owning (%)	Mean Owned per Household	Range of Ownership	Total No. of Livestock Owned By Entire Sample
Horse	38	1.0	1-6	98
Cattle	12	4.0	1-12	124
Pigs	55	4.9	1-48	700
Goats	27.5	2.5	1-8	179
Total fowl	70	20.2	1-50	3,676

[101] SOURCE: William F. Clark, data collected through personal survey, Kingdon of Tonga, August-October, 1974.

[438] [439] Livestock, as a food source or a cash product, is raised almost exclusively for the domestic market. Very little of this produce is exported to neighboring nations. In addition, the domestic role of livestock is complex and complicated by tradition. 262 Pork is consumed more frequently than any other meat source, excluding fish, and with the possible exception of poultry. 272 Fresh milk, for feeding small children, is usually in short supply, although the large number of goats on the islands represents a potential source of milk protein. Tradition, however, undermines the widespread use 262 of goat's milk. Food production and consumption patterns in traditional Tongan society are more often influenced by social custom than by need.

231 Survey results indicated that horses are owned by 38 per- 492 cent of Tongan households, and are used as a means of transportation.

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

231 Being a scavenger, the pig is generally allowed to roam unrestrained, although laws prohibit the animal from being untended in major urban areas of each island group. However, enforcement of these laws appeared to be quite lax. Roaming animals were frequently noted on the periphery of the main business sections of Nuku'alofa and Neiafu, as well as entering and leaving the royal grounds in Nuku'alofa. In villages, pigs are occasionally confined to prevent crop destruction. However, it was observed that confined pigs appear less healthy than those left unrestrained. This is probably the result of poor environmental management, plus the disruption of scavenging.

Seventy percent of those surveyed owned some variety of fowl, with chickens being the most frequent. Fowl, which represent the third scavenger in Tongan agriculture, are seldom confined. Their major food function is the provision of meat, since eggs are seldom collected. The sale of eggs was noted only infrequently, and at a price prohibitive to the typical Tongan. A single egg may sell for as much as 13 cents. Most eggs are left undisturbed to hatch, although more than half of any given brood dies from dampness or destruction by other animals. Thus, lack of management successfully eliminates the utilization of eggs as a food source, plus severely reduces the number of fowl available for consumption.

262 438 435

To summarize, livestock ownership remains largely a matter of status, often exemplifying more value as a product of social exchange than as a source of food. The maintenance of stock is

101: Clark K-4,5 (1974) 978 OU9 Tonga OU9

245 decreasing production of bananas is the spread of black leaf streak, bunchy top and scab moth.)

439 [647] Marketing of banana produce, through the Tonga Produce Board, is often difficult because of improper scheduling of shipping facilities and the subsequent sale of under or overripe fruit. [435] In one example, 9,000 cases of produce became overripe while in wharfage awaiting shipment, resulting in the fruit being sold for 40 cents per case (Report of the Minister of Agriculture 1973, p. 5). The bulk of banana produce is shippped to New Zealand, although the shipping difficulties and quality control remain 245 obstacles to full entry into this market. These same problems 439 with marketing, shipping and quality have been effective in removing [654] many Tongan farmers from banana production. At present, the Produce Board reports that export levels are so low that levies are not sufficient to provide a comprehensive service to growers in such areas as disease control ("Banana Exports . . ." 1974, p. 5).

439 438 In addition to the exportation of bananas, coconut, and miscellaneous melons, fruits and vegetables to international markets, small quantities of produce are also traded among the islands, the most important of these transfers being from 'Eua to Nuku'alofa on Tongatapu, and from Nuku'alofa to Pangai and Neiafu. This movement involves not only domestic produce, but also food imports such as tinned meats, sugar, flour and a wide range of foodstuffs sold through the local stores (fale koloa).

443 [438] [366] Large quantities of produce are also marketed domestically. Although some produce is sold in several smaller settlements, the

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

largest markets are Nuku'alofa in Tongatapu, Pangai in Ha'apai, and Neiafu in Vava'u. Such markets cater to two principal groups, although many people travel to market to buy, sell, or socialize. Those members of the non-Tongan population who do not lease land, such as church facilities, and must purchase market food, represent one group. Though not large in comparison to the Tongan population, this group does contribute a significant cash input to the local economy. The second group consists of landless Tongans and those Tongans who do not farm or garden intensively and derive cash income from other means.

Producers, or members of their families, most frequently sell directly to the consumer. Saturday is market day (although the major markets carry some business throughout the week, except Sunday) and the market area becomes the center of urban activity. Individuals having produce to sell may rent one of several types of stalls or floor space, upon which to display their produce. The staple foods (i.e., tubers, coconuts, and bananas) are the major items sold, although other types of food produce and miscellaneous items, such as shells, carvings, and handicrafts, are also available. Marketing hours generally are from 8:00 A.M. to 5:00 P.M., with the busiest time being in the forenoon and early afternoon.

Personal observations, plus discussions with sellers, revealed several marketing patterns. A few farmers or craftsmen sell each day or week on a regular basis, and generally have rented stalls which can be locked at the end of each day. Rental for these is on a monthly basis, and costs the producer eight dollars per month.

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

000
443 month. On the other hand, some farmers market their produce only monthly or occasionally during the year, depending upon when a cash
443 need arises. A third type of seller is the craftsman who produces
439 items of quality specifically for the tourist trade (i.e., handicrafts of wood, shell or tortoise shell) and markets these goods only when a tourist ship or plane has brought passengers from Fiji or Samoa. Thus, the craftsman's sales are largely independent of the needs of native Tongans. The prevalence of this type of producer is expected to increase, as tourism develops within Tonga.

443 A variety of baked goods may also be found in the market
438 on Saturday. Though largely devoid of flavor and extremely heavy
[262] in texture, Tongan "cakes" are popular and sell rapidly. An excellent market also exists for peanuts. Supply rarely is adequate to meet demand. The sale of kava (from which "Tongan beer" is made) is also brisk. Kava is lightweight and easily transportable. Producers on Ha'apai, Vava'u and many of the isolated islands often send kava to Nuku'alofa for sale.

[655] The major competitor to the open-air market is the Vuna Government Market, which handles the majority of fish and meat sales to Nuku'alofa and surrounding Tongatapu. Many of the local stores are also beginning to sell fresh meat products. Consequently, the amount of meat sold in the market fell from 160,771 pounds in 1971,
443 to 94,684 pounds in 1973. The sale of fresh fish in the market
438 rose during the same period, mainly due to the operation of a gov-
655 ernment fishing vessel which had a total catch of 203,243 pounds in
228 1973 (Report of the Minister of Agriculture 1973, p. 24).

101: Clark K-4,5 (1974))78 OU9 Tonga OU9

226 Fishing activity is often not cons dered part of the agri-
226 cultural sector of an economy. However, i Tonga fishing represents
434 a significant cash input to the local agri ultural base. Of the
total survey sample, over 15 percent of th se questioned indicated
that they derived some part of the househo d cash income from fish-
228 ing. The Tongan government obviously cons lers fishing to be of
655 significant value to the national economy, in that it includes
evaluations of fishing catch and sale with n the annual reports, and
[505] operates one major fishing vessel, the Ekiaki. This ship is of
modern construction and contains some refri eration and pre-processing
facilities. In 1973, the Ekiaki landed a t tal of 203,243 pounds of
fish, representing a catch percentage (catc per 100 hooks) slightly
better than Korean and Chinese operations i the region. This total
catch was smaller than anticipated, due to echanical breakdowns and
the lack of trained operation personnel.

228 Tongan waters are a largely untapped source of food, includ-
136 ing such fish species as tuna, bill-fish, and shark (Report of the
443 Minister of Agriculture 1973, p. 30). In 1 73, sale of fish through
434 the Vuna market equaled over $15,000, or 12 ,000 pounds. However,
[438] demand for fish in Nuku'alofa far excelled his amount. Personal
observations evidenced that on those days w en fish is to be sold,
crowds of consumers wait hours before the market opens.

228 Despite the fact that domestic demand for fish is unsatura-
439 ted, 40 percent of the Ekiaki's total catch for the year 1973, was
434

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125 The information acquired for the household frequency of consumption record usually consisted of rough approximations. However, several important aspects became evident during the rural to 263 urban comparison. For example, household usage of sugar was found to be as high as 3.31 pounds per person per week in Nuku'alofa, although the average for the entire urban sample was 1.18. On the other hand, rural consumption of sugar averaged only .57 pounds per 262 week. Cereal products, including bread and flour, are also used in greater quantities in Nuku'alofa than in rural areas.[1]

[272] The consumption of soft drinks, alcoholic products, and [273] cassava significantly increased in the urban areas, while the con- [435] sumption of yams decreased. In the case of tubers, this fact most probably reflects economic forces which dictate that a basket of cassava cost T$.80, while a basket of yams sells of T$10-12.[2]

A higher rate of consumption of canned meat products was also observed in the urban area, although this product is widely used throughout Tonga--a probable reflection of its ease of distri- 125 bution, storage and social status. A purchase of two samples of 146 the most commonly used canned meat, and a subsequent proximal

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[443] [438] [1]This data may have been influenced by the distribution of such products over the islands. Surveys of stores in rural villages indicated that often sugar, flour and bread were not in stock. At times, the entire kingdom is devoid of such basic commodities as sugar or flour. In one such incidence, over two weeks elapsed before a new shipment arrived from overseas sources, during which the entire nation lacked sugar. However, even with consideration being given to these influences, a significant variation between rural and urban consumption is evident.

[2]Prices acquired in the Nuku'alofa market, October, 1974.

101: Clark K-4,5 (1974) 1978 OU9 Tonga OU9

313 sector is directed to the construction of banana cases and local
313 housing construction. It should be noted, however, that since
654 1954, the Tongan Department of Agriculture has begun a small scale reforestation program designed to determine the feasibility of developing this as an exportable economic resource (Great Britain Colonial Office 1956-64, p. 22).

241 Other species of vegetation which are culturally important to Tongans are those which produce the majority of the nation's food. These include the breadfruit, coconut, banana and various root crops.

433 Until recently, Tonga has had the distinction of being one of the few Pacific territories which could be called a self-supporting community (Harris 1966, p. 127). Economically, Tonga is essentially an agricultural country. There are no notable developed mineral resources and the only industry consists of minor processing
439 facilities for agricultural products. Economic necessities from outside the islands are paid for by exports of bananas and coconut
457 products in most cases. Until recently, Tonga enjoyed a favorable balance of trade. However, this balance has tended to reverse in the past few years with the tendency toward larger and larger deficits as shown in Table 20.

511 The population in the past has been in the position to plant
a [439] a large portion of their food requirements. Any cash requirements were usually provided through the sale of bananas and coconuts to regional collection points (Great Britain Colonial Office 1956-64,
511 p. 11). This subsistence system is rapidly altering due to increasing
178 [See Category 457, p. 124--Analyst.]

105: Vaea & Straatmans G,I-3 (no date) 1954
OU9 Tonga OU9

10.—Processing of Fish.

251 Processing of fish is not a general practice in Tonga. It is only carried out when necessary to preserve such an excess of fish which cannot be consumed by the inhabitants of an island, or to be exported to another island. Sometimes when the fishermen catches fish far in excess of the island's rate of consumption, for instance *'otule, 'atu, o, 'ava* and other species, inhabitants feel compelled to adopt this method.

Tonga processing of fish is a combination of salting, sun-drying and smoking. To preserve the fish, the head is cut off first and then the fish is split in two. One half being a pure lump of meat, the other half has the bones and tail. Having removed the insides, they are immediately salted and are then ready for sun-drying. The actual drying takes place at a clear spot where sunshine is abundant with plenty of fresh air. The beach is the most favourable spot for this work. A wooden platform is built fairly high to be out of reach of stray dogs and the fish is laid out on top. They are kept there all day and by the evening are taken off the platform and stored away in a safe place until next morning when they are placed on the platform again and so forth, until after five days of good sunshine the fish is in a good condition to be taken off the platform. Strung together they are hung near the roof of a little hut for the final process of smoking. A fire is made for this purpose and kept going for at least forty-eight hours. After that stage the fish is ready for consumption and inter-island export.

Sun-drying of octopuses is prevalent amongst the islands of Ha'apai. It is effectively done by using sticks to stretch the body of the octopus which is then hung on trees [428] or lines for drying in the sun. Octopuses caught by the *makafeke* method are sun-dried and sent to Tongatapu and Vava'u in exchange for yams. These " fish " being so small, are strung together in bunches of hundreds and hung out in the sun for drying; they are not salted nor smoked.

11.—Fisheries Regulations.

226 The law of Tonga strictly prohibits the use of dynamite or other explosives in fisheries.

225 Turtle fishing is prohibited between the 1st November